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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,692	08/24/2001	Hirosumi Suzuki	109676	9657

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EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/935,692	SUZUKI ET AL.	
	Examiner	Art Unit	
	Scott L. Jarrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24 and 28-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24 and 28-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1 .17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.1 14, and the fee set forth in 37 CFR 1 .17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.1 14. Applicant's submissions filed on August 10, 2006 and July 6, 2006 have been entered.

Applicant's amendment filed July 6, 2006 amended claims 1-24 and 28-30 and canceled claims 25-27. Currently Claims 1-24 and 28-30 are pending.

Response to Amendment

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Response to Arguments

3. Applicant's arguments with respect to claims 1-24 and 28-30 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claims 1 and 12-13 are objected to because of the following informalities: Claims 1 and 12-13 recite that the system/method is "*capable of* producing different articles or services... *capable of* supplying" (emphasis added) wherein the system/method as claimed merely has the potential to produce different articles/services but does not actually produce/supply different articles or services.

Examiner suggests Applicant's amend the claims to read that the system and method actually produces different articles or services on a plurality of supply stations that actually supply the article or service. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-24 and 28-30 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention.

The public use or sale of the invention, a system and method for drafting a supply plan of an article or service in a plurality of production lines capable of producing different articles or services each production line including a plurality of workstations, sold and/or used by the Applicant under one or more of the following product/service names: Toyota Production System is evidenced by at least the following:

I. Coleman, Jay et al., Heijunka (?): A Key to the Toyota Production System (1994);

II. Chase et al., Production and Operations Management (1995); and

III. Sparling, David, Balancing Just-In-Time Production Units: The N U-Line Balancing Problem (1998).

Toyota teaches a system and method for drafting a supply plan of an article or service in a plurality of production lines capable of producing different articles or services each production line including a plurality of workstations comprising (Coleman

et al.: Column 1, Last Paragraph, Page 31; Column 2, Page 31; Column 1, Paragraphs 1, 3, Page 32; Column 1, Last Paragraph, Page 33; Column 2, Paragraphs 2-3, Page 33; Chase et al.: Paragraphs 2-3, Page 243; Exhibit 6.5; Last Paragraph, Page 41; Paragraph 4, Page 413; Paragraph 1, Page 531; Sparling: Abstract; Paragraphs 2-3, Page 217; Reference 5, Page 237):

- unit supply man-hour data, unit-workforce-type time and cost data;

- required supply volume for an entire required supply volume of the article/service;

- distributing (assigning, allocation, etc.) the required supply volume to a plularily of supply stations (supply station volumes)

- calculating a station supply man-hour required to supply the supply station volume and setting a workforce-type based on a workforce parameter;

- calculating a gross cost to supply the supply station volume based on the workforce type and workforce type cost;

- reiteratively (successively, repeatedly, etc.) changing the distribution and workforce parameters to minimize gross cost.

An issue of public use or on sale activity has been raised in this application. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b), additional information regarding this issue is required as follows please provide the names of any products or services that have incorporated the claimed subject materials well as information regarding their public use and/or sale (e.g.

investor disclosures, case studies, product manuals, product/system brochures, user's guides, conference papers/presentations, industry journal articles, etc.), and provide a citation and a copy of each publication which any of the applicants authored or co-authored and which describe the disclosed subject matter and/or products or services.

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-22 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chase et al., Production and Operations Management – Seventh Edition (1995) in view of De Matta et al., Dynamic Production Scheduling For Process Industry (1994).

Regarding Claims 1 and 12-13 Chase et al. teach a system and method for drafting a supply plan of an article or service comprising (Pages 407, 410, 519, 528-529, 531, 638-639, 644-647; Exhibits 3.13-3.14, 13.1-13.7, 6.5, 6.8, 10.1, 16.3-16.6, 16.10, S16.1, S16.2):

- storing unit supply man-hour data and time required to supply the article/service *or* the service per unit and unit work-force-type-based cost data cost data on cost per unit according to work force types (production rates, costs, etc.; Paragraphs 2-3, Page 243, Page 517; Exhibits 6.5, 13.1-13.12);

- inputting an entire required supply volume of the article/service (demand, production requirement; Exhibit 13.4);

- distributing (assigning, allocating, allotting, etc.) the required supply volume to station (workstation, workers, machines, cells, plants, lines, groups, plants, etc.) supply volumes to be supplied from the supply stations (aggregate production planning, capacity planning, assignment problem, assembly line balancing, hierarchical planning process, order planning, personnel scheduling, job-shop scheduling, uniform plant loading, balance workstation capacities, etc.; Paragraph 1, Page 513; Paragraph 1, Page 514; Paragraphs 2-3, Page 515; Number 1, Page 637; Pages 638-639; Last Paragraph, Page 644; Exhibits 6.8, 13.1, 13.2, 13.5);

- calculating a station supply man-hour required to supply the article/service of the distributed supply volume based on the unit supply man-hour data and setting a work-force-type based a work force parameter (Page 407; Paragraphs 1-2, Page 517; Table, Page 521; Exhibits 10.1, 13.5);

- calculating a gross cost to supply the station supply volume based on the work-force type and unit work-force type cost data (Number 1, Page 520; Exhibits 13.5-13.7, 13.9);

- reiteratively (successively, recursively, repeatedly, iteratively, trial-and-error, cut-and-try, etc.) changing the distribution of the required station supply volumes (line balancing, leveling) and workforce parameter (production leveling, production smoothing, linear programming, simplex method, etc.; Last Paragraph, Page 520; Pages 347-348; 532-533; Paragraph 1, Page 647; Exhibits 13.12, S16.2); and

- selecting and using a revised workforce parameter and distribution of the station supply volumes corresponding to a minimum gross cost (e.g. selecting a

production planning strategy; Paragraph 2, Page 518; Paragraph 1, Page 647; Exhibit 13.5-13.7, 13.11).

Chase et al. does not expressly teach distributing the required supply volume to station supply volumes to be supplied from the supply stations *based on a distribution parameter* as claimed.

De Matta et al. teach distributing the required supply volume to station supply volumes to be supplied from the supply stations *based on a distribution parameter* (X_{ijts}) and workforce parameters (Abstract; Column 2, Page 494, Column 1, Page 495; Section 4, Pages 496-497; Column 1, Page 501) in an analogous art of drafting a supply plan for the production of an article on multiple production lines (Column 1, Page 493) for the purposes of drafting a facility wide supply plan wherein the distribution of the required supply volumes to stations/production lines is continually revised (assigned/re-assigned) of in order to meet the overall required supply volume and minimize production costs (Column 1, Lines 493; Column 1, Last Paragraph, Page 496; Column 2, Page 501).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a supply plan of an article as taught by Chase et al. with its utilization of well known aggregate production planning, capacity planning, assembly line balancing and uniform plant loading to do such things as balance

workstation capacities would have benefited from distributing the required supply volume to station supply volumes to be supplied from the supply stations *based on a distribution parameter* in view of the teachings of De Matta et al.; the resultant system/method enabling businesses to assign/re-assign (i.e. continually adjust) of the required supply volume to a plurality of production lines in order to meet the overall required supply volume and minimize costs (De Matta et al.: Column 1, Lines 493; Column 1, Last Paragraph, Page 496; Column 2, Page 501).

Regarding Claims 2 and 14 Chase et al. teach a system and method for drafting a supply plan wherein the distribution of the required station supply volumes changes within a suppliable range of the supply stations (capacity constraints, capacity planning, resource availability; Paragraph 2, Page 518; Pages 318, 326, 535-536; Exhibit 13.5).

Regarding Claims 3 and 15 Chase et al. teach a system and method for drafting a supply plan wherein the suppliable range includes (constraints, capacity planning, etc.; Pages 318, 326, 410, 528-529; Exhibits 13.2, 13.5-13.8):

- regular operations range and costs; and
- irregular operations ranges and costs including having overtime and other irregular operation ranges/service ranges and costs (off-season, extra hours, etc.).

Regarding Claims 4 and 16 Chase et al. teach a system and method for drafting a supply plan wherein the irregular suppliable range includes an overtime suppliable

range based on overtime service (constraints, capacity planning, etc.; Pages 318, 326, 410, 528-529; Exhibits 13.2, 13.5-13.8) and the irregular operation unit-work-force-type based cost data includes overtime costs data for the work-force types.

Chase et al. does not expressly teach a holiday service suppliable range based on holiday service as claimed.

Official notice is taken that operating production facilities during "non-regular" hours is old and very well known wherein the irregular hours includes nights, weekends, overtime, holidays or the like wherein irregular operations are typically employed to meet product demand that can not be met with regular operations (i.e. increase capacity of the line, plant or workstation).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a supply plan with its ability to plan for a plurality of irregular operating times/alternatives (overtime) as taught by the combination of Chase et al. and De Matta et al. would have benefited from accounting/planning for any of a plurality of well known irregular operations times and costs in view of the teachings of official notice; the resultant system being capable of meeting demand through the utilization of irregular operations such as holidays, weekends or the like.

Regarding Claims 5 and 18 Chase et al. teach a system and method for drafting a supply plan further comprising change the ratio of work-force-types as a factor of the workforce parameter (Paragraph 1, Page 513; Number 2, Page 519; Pages 528-529; Number 3, Page 638; Exhibit 13.11).

Regarding Claims 6 and 19 Chase et al. teach a system and method for drafting a supply plan wherein the work-force-types include regular and a plurality of types of temporary employees and changing the ratios of work-force-types by changing percentages (ratio, mix, etc.) of types of temporary employees (Paragraph 1, Page 513; Number 3, Page 638; Exhibits 13.5, 13.11).

Regarding Claims 7 and 20 Chase et al. teach a system and method for drafting a supply plan further comprising changing (reiteratively, repeatedly, successively, etc.) the workforce in each of the supply stations as a factor of the workforce parameter (Paragraph 1, Page 513; Paragraph 1, Page 514; Paragraphs 2-3, Page 515; Number 1, Page 637; Pages 638-639; Last Paragraph, Page 644; Exhibits 6.8, 13.1, 13.2, 13.5).

Regarding Claims 8 and 21 Chase et al. teach a system and method for drafting a supply plan further comprising change a gross workforce in the supply stations within a workforce changeable range of the supply stations (capacity planning, production/order assignment, etc; Pages 318, 326, 410, 528-529; Exhibits 13.2, 13.5-13.8).

Regarding Claims 9, 17 and 22 Chase et al. teach a system and method for drafting a supply plan wherein the parameters are changed (reiteratively, periodically, successively, etc.) at a predetermined interval for each of the parameters (re-balancing, re-planning, yearly, annually, quarterly, monthly, daily, etc.; Paragraph 1, Page 514; Paragraphs 2-3, Page 515; Exhibits 13.1-13.2).

Regarding Claims 10-11 Chase et al. teach a system and method for drafting a supply plan wherein (Paragraphs 2-3, Page 243, Page 517; Exhibits 6.5, 13.1-13.12):

- the supply stations are production lines (assembly lines, cells, groups, plants, etc.) for producing an article/performing a service; and

- the unit supply man-hour data are data on the workforce and time required to produce a single unit of the article/service.

Regarding Claims 28-30 Chase et al. teach a system and method for drafting a supply chain wherein the workforce parameter includes regular full-time, part-time, contract workers and regular and overtime pay rates (Pages 318, 326, 410, 528-529; Exhibits 13.2, 13.5-13.8).

Chase et al. does not expressly teach holiday pay rates as claimed.

Official notice is taken that operating production facilities during non-"regular" hours/times wherein the irregular time includes rates/costs typically different from regular operations (e.g. time and a half, etc.) is old and very well known wherein the irregular hours includes nights, weekends, overtime and holidays as the like wherein irregular operations are typically employed to meet product demand that can not be met during regular operations.

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a supply plan with its ability to plan for a plurality of irregular operating times/alternatives (overtime) as taught by the combination of Chase et al. and De Matta et al. would have benefited from accounting/planning for any of a plurality of well known irregular operations times and costs in view of the teachings of official notice; the resultant system being capable of meeting demand through the utilization of irregular operations such as holidays, weekends or the like.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable Costanza, John, U.S. Patent No. 6,198,980 in view of Sparling, David, Balancing Just-In-Time Production Units: The N U-Line Balance Problem (1998) and further in view of A Decision Support System (Software) for Personnel Scheduling in a Manufacturing Environment (DSSPS) as evidenced by at least the following:

I. Parker et al., A Decision Support System for Personnel Scheduling in a Manufacturing Environment (1994), herein after reference A; and

II. Ducote et al., A Design of Personnel Scheduling Software for Manufacturing (1999), herein after reference B.

Regarding Claim 23 Costanza teaches a system and method for drafting a production plan for producing an article in a mixed-model production line every plan including plan including a plurality of operating days comprising (Abstract; Figures 2, 4-6):

- allocating, provisionally (initially, temporarily, etc.), a planned production volume a production line (demand-at-capacity) and a plurality of workstations (cells) during the plan-execution period (Column 3, Lines 33-65; Column 14, Lines 24-64);

- calculating an operating time in each of the production lines during the plan-execution period corresponding to a determined takt time (production rate) in each of the production lines (stations, cells, groups, plans, etc.) based on the production volume, a relation between takt time, planned production volume and operating time (operational cycle time) in each of the workstations and the production line (Column 3,

Lines 33-65; Column 4, Lines 4-29; Column 9, Lines 15-26; Column 19, Lines 1-68; Column 20, Lines 30-55);

- calculating the number of workers required in each of the workstations and production line based on the set operating time (Column 4, Lines 4-29 and 54-58; Column 5, Lines 1-25);

- balancing the production line and resources by reiteratively (iteratively, successively, repeatedly, recursively, etc.) adjusting, in nested sequence, the number of workers distributed to the worker categories, tact time and the production volume allocated each of the workstations (resource balancing, production/product synchronization; Column 5, Lines 1-25; Column 11, Lines 48-65; Column 20, Lines 30-55; Figure 6).

Costanza does not expressly teach calculating a personnel cost in each of the workstations and production line after distribution of the calculated number of workers to worker categories with different hourly wages or subsequently calculating a gross personnel cost in all of the production lines by summing the personnel costs in the respective production lines wherein the cost is determined by reiteratively adjusting, in nested sequence, the number of workers distributed to the worker categories, tact time and the production volume allocated each of the production lines as claimed.

DSSPS teaches calculating a personnel cost in each of the workstations of a production line after distribution of the calculated number of workers to worker

categories with different hourly wages and subsequently calculating a gross personnel cost in all of the workstations of the production line by summing the personnel costs in the respective workstations wherein the cost is determined by reiteratively adjusting, in nested sequence, the number of workers distributed to the worker categories, tact time (operational cycle time) and the production volume allocated each of the workstations (reference A: Column 1, Paragraphs 2-3, Page 185; Column 1, Paragraphs 1-4, Page 186; Column 1, Paragraphs 1-2, Page 187; Column 2, Paragraphs 1-3, Page 187; reference B: Abstract; Page 474, Paragraphs 2, 4, Page 476) in an analogous art of drafting a supply/production plan for the purposes of enabling business to generate personnel schedules (plans) for a mixed/flexible workforce comprising a plurality of work-force-types (reference A: Last Bullet Page 187; Bullets 1-2, 6, Page 188).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a production plan for a plurality of workstations in a mixed-model production line as taught by Costanza would have benefited from utilizing and planning for a plurality of well known work-force-types by calculating the personnel costs and schedules for the plurality of work-force-types as taught by DSSPS; the resultant system/method enabling business to generate personnel schedules (plans) for a mixed/flexible workforce comprising a plurality of work-force-types (DSSPS reference A: Last Bullet Page 187; Bullets 1-2, 6, Page 188).

Neither Costanza nor DSSPS expressly teach drafting a supply plan for a plurality of production lines as claimed.

Sparling teaches drafting a supply plan for a plurality of production lines (N U-Lines, JIT Production Units, etc.) in an analogous art of supply/production planning for the purposes of "balance an entire production facility simultaneously, minimizing the total labour force" (Paragraph 3, Page 217; Assumptions 1-13, Page 200; Section 3, Pages 222-224; Paragraph 1, Page 234).

Sparling further teaches that U-Line/Multi-Station balancing problems are old and very well known and commonly used in Just-In-Time Manufacturing environments wherein JIT facilities produce "several distinct type of products, each with its own production lines" wherein "the cycle time for any U-line is determined by demand for the product produced on that line" (Paragraph 2-3, Page 214; Figure 3).

Sparling teaches iteratively solving a "multi-station assignment problem" wherein the method assigns (distributes) the tasks (supply volume) in multi-line subsets to stations (Steps 2.3-2.4, Page 223).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a production plan for producing an article in a production line as taught by the combination of Costanza and DSSPS would have benefited from being adapted to account for the well known utilization of multiple mixed-model production lines in view of the teachings of Sparling; the resultant system and

method enabling businesses to "balance an entire production facility simultaneously, minimizing the total labour force" (Paragraph 3, Page 217) and/or balance multiple U-Lines in a JIT production unit (group of U-Lines) simultaneously thereby increasing the productivity of the facility/group of production lines (Paragraph 1, Page 234).

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Costanza, John, U.S. Patent No. 6,198,980 in view of Sparling, David, Balancing Just-In-Time Production Units: The N U-Line Balance Problem (1998) in view of A Decision Support System (Software) for Personnel Scheduling in a Manufacturing Environment (DSSPS) as evidenced by at least the following:

I. Parker et al., A Decision Support System for Personnel Scheduling in a Manufacturing Environment (1994), herein after reference A; and

II. Ducote et al., A Design of Personnel Scheduling Software for Manufacturing (1999), herein after reference B

as applied to claim 23 above, and further in view of Kiritsis et al., Petri net techniques for process planning cost estimation.

Regarding Claim 24 Costanza does not expressly teach calculating costs utilizing a Petri net model as claimed.

Kiritsis et al. teach cost estimation in manufacturing/production processes utilizing Petri net model (Process Planning Cost system, Process Planning Net) wherein "In order to determine the overall costs for feasible process plans, we take into account in our Petri net model of manufacturing process planning the costs caused by machine, setup and tool changing in addition to pure operation cost" (Abstract).

Kiritsis et al. further teaches that the Petri net model approach takes "into consideration processing alternatives" (e.g. different worker types; Abstract).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for drafting a production plan as taught by the combination of Costanza, DSSPS and Sparling would have benefited from modeling (calculating, determining, estimating, etc.) production costs in view of the teachings of Kiritsis et al.; the resultant system enabling users to account for costs based on processing alternatives (Kiritsis et al.: Abstract).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Jain et al., U.S. Patent No. 5,077,661, teach a system and method for iteratively drafting a supply (production) plan of an article in a production line capable of producing multiple products wherein the system/method optimizes/minimizes the minimum cost of producing the articles taking into a plurality of constraints such as resource availability.

- Hoge, John, U.S. Patent No. 5,280,425, teaches a production planning system and method for drafting a supply plan for supplying an article wherein a plurality of theoretical (provisional) plans are generated and optimized (e.g. minimize cost, meet resource constraints, etc.).

- Wedelin, Dag, U.S. Patent No. 5,343,388, teaches a system and method for iteratively drafting a supply plan for production an article on a production line.

- Yuri et al., U.S. Patent No. 6,249,715, teach a system and method for optimizing the distribution of work to a plurality of workstations in a production/assembly line.

- Villanova et al., U.S. Patent No. 6,459,946, teach a system and method for drafting a supply plan for a production line wherein the system/method determines the workforce required to meet a required supply volume.

- Trautmann et al., U.S. Patent No. 7,062,448, teach a system and method for reiteratively generating a supply/production plan for production a plurality of articles in

based on a plurality of resource constraints including but not limited to resource calendars (e.g. night shifts, breaks, etc.).

- Nishizono, Shigeo, U.S. Patent Publication No. 2003/0110069, teaches a system and method for drafting a supply plan comprising calculating the number of workers required to meet a required supply volume and allocating the workers to each operation process in order to supply the required supply volume.

- Lippman et al., Optimal Production Scheduling and Employment Smoothing with Deterministic Demand (1967) teach a system and method for drafting a supply plan for supplying a required volume of an article that minimizes production, workforce (regular, overtime, etc.) and inventory costs in a production line capable of producing multiple products.

- Evans et al., A Generalized Lagrange Multiplier Algorithm for Optimum or Near Optimum Production Scheduling (1972) teaches a system and method for minimizing the cost of producing an article subject to regular and irregular workforce constraints and costs (e.g. overtime rate/costs, regular time hours available, apportionment between regular and overtime).

- Sadowski, Manpower Scheduling Method Simplifies Production Line Assignments through Graphics (1981) teaches a method for drafting a supply plan comprising optimizing the distribution/assignment of a workforce (manpower) in a production line.

- Shin et al., Flexible Line Balancing Practices in a Just-In-Time Environment (1991) teaches a system and method for drafting a supply plan for supplying an article

in a production line comprising periodically balancing/re-balancing the number of workstations, workers and workstation cycle time in order to supply a required volume of the article.

- Downey et al., Assembly line with flexible work-force (1992) teaches method for drafting a supply plan for one or more production/assembly lines for producing an article comprising assigning a flexible workforce to stations while minimizing/optimizing the cost.

- Bernhard et al., Manpower capacity planning (1993) teaches a method for drafting an optimal supply plan for a production line wherein the production line comprises a plurality of work-force-types (overtime, floaters, leased, etc.).

- Inman, Robert, Scheduling Preventative Overtime (1996) teaches a method for drafting a supply plan of an article to be produced wherein irregular operations (e.g. overtime) is utilized to produce the required supply volume.

- Akkan, Can, Overtime Scheduling (1996) teaches a method for drafting a supply plan comprising irregular operations (overtime) which minimizes the cost of the irregular operations to meet a required supply volume/due-time, determines the amount of irregular operations required and distributes the irregular operations to work centers (stations, lines, etc.).

- Chung et al., Workforce Planning in Mixed Model Assembly Systems (1997) teach a method for drafting a supply plan for an article to be produced to meet a required supply volume on a mixed-model production line wherein the method drafts a

workforce schedule/plan based on the required supply volume, production cycle time, number of stations and workforce types/categories.

- Graves, Stephen, Manufacturing Planning and Control (1999) teaches a plurality of well known concepts, techniques and methods for drafting supply plans for producing one or more articles wherein the plans are optimized in order to minimize cost while still meeting the required supply volume. Graves further teaches the well known utilization of various workforce types/categories/classes and utilizing the costs of the various workforce classes to determine the optimal levels/balance of workforce types required to meet the required supply volumes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SJ
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